

**Title:** Early Linkage to Prenatal Care: Preliminary Analysis of Relationships between Potential Risk Factors for Perinatal Transmission of HIV and Early Linkage To Prenatal Care

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### **Background/Objectives**

The proportion of female AIDS cases is increasing across the state and across other transmission risk groups, especially among IDU, black, and white AIDS cases. Most of the increases in IDU and female AIDS cases consisted of black females. Over 80% of female AIDS cases were women of childbearing age (CBA), ages 13-44 years, in each successive year of diagnosis over the past 10 years. The main risk factors for female AIDS cases of CBA were IDU, sex with an IDU male and HIV positive males with no specified risk (under further investigation); in excess of 70% (5-year average, 1992-6) were directly or indirectly associated with IDU. The distribution of maternal risk factors for perinatally infected AIDS-infected children followed the same pattern as that for women of CBA, over 65% (5-year average, 1992-6) of transmission was directly or indirectly associated with IDU.

The objectives were to assess the interrelationships between potential risk factors of perinatal transmission of HIV in relation to the intermediate outcome (intervening variable) of early linkage to prenatal care. More specifically, the objectives were to: 1) describe the relationship between race/ethnicity and maternal mode of transmission; 2) describe the association between race/ethnicity and maternal mode of transmission to early ( $\leq 16$  weeks of gestation) linkage to prenatal care. The outcome analyses did not include the final HIV status of the child as many cases are still under investigation.

### **Study Population**

These preliminary analyses are based on the study population for the first phase of the project, which consisted of live births of perinatally exposed infants reported in sentinel facilities with more than 1000 live births per year in a four-county area of southeastern Pennsylvania (PA) surrounding Philadelphia. Subsequent phases of the study include cases of perinatal exposure reported statewide across PA. PA is one of 16 states participating in a CDC initiative for enhanced surveillance and prevention of perinatal exposure to HIV.

### **Methods**

- The enhanced perinatal surveillance dataset was matched to the state's HIV/AIDS surveillance data for analysis.
- Univariate analyses were performed to examine relationships between race/ethnicity and maternal mode of transmission; race/ethnicity and linkage to early prenatal care; and mode of transmission vs. linkage to early prenatal care.

More complex sub-stratification and multivariate analyses were not feasible due to sample size limitations (n=63 mother-infant pairs in selected study population).

## Results

- The likelihood of IDU was 1.5 times greater for blacks compared to whites (OR 1.5; 95% CI 0.3–8.02), however, the confidence interval was wide, including the null value most likely due to the small sample size in study population selected for this analysis; hence we conclude that the likelihood of IDU vs. heterosexual contact as maternal modes of transmission may or may not be comparable for whites and blacks. The pattern was similar for Hispanics compared to whites (OR 1.3; 95% CI 0.33–6.53).
- The likelihood of late linkage to prenatal care was 1.24 times greater for blacks compared to whites (OR 1.24; 95% CI 0.31–4.99), however, the confidence interval was wide including the null value; hence we conclude that the likelihood of late linkage to prenatal care may or may not be comparable for whites and blacks. The pattern was somewhat similar for Hispanics compared to whites (OR 1.11; 95% CI 0.23–5.41).
- The likelihood of early linkage to prenatal care was comparable for mothers who were IDUs and those who had heterosexual contact as modes of transmission (OR 1.08; 95% CI 0.27– 4.22). The wide confidence intervals in these analyses indicate that the results are imprecise, most likely due to the small sample available for analysis in these preliminary analyses.

## Discussion

Important limitations to the preliminary findings presented above include:

1. The small sample size of the study population available for this preliminary analysis;
2. The incompleteness of key variables still under investigation (i.e. final HIV status of the child) and
3. Geographic split in the study areas within the state.

1 and 2 will be resolved through the progression and completion of case investigations. The selected study population is primarily suburban facilities throughout southeastern Pennsylvania; the state could not do a comparative geographic analysis of urban vs. sub-urban cases in PA as Philadelphia cases were not included.

However, our previous analysis in the larger AIDS surveillance cohort suggested that there is a continuing need for targeted prevention interventions aimed at interrupting the transmission of HIV which occurs through:

- 1) IDU among men, and among women of CBA
- 2) heterosexual contact between women of CBA and IDU males and/or HIV-positive males.

## Conclusions

These interventions would significantly reduce the risk of perinatal HIV transmission to newborn infants, and obviate the need for costly and potentially toxic antiretroviral treatment of HIV-positive pregnant women and their newborns. Outreach programs to ensure early linkage to prenatal care for at-risk women may increase the opportunity for timely HIV testing and treatment with preventive antiretroviral treatment which has been shown to reduce perinatal transmission of HIV.

The reporting of perinatal exposure to HIV is continuing in PA and further analysis will be conducted with larger study populations as the project progresses.